

Application Serial No: 09/851,376  
Attorney Docket No.: ACT-131

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1. (Previously Presented) An optical waveguide ferrule comprising:
  - a carrier tube having a central axis which extends in a longitudinal direction;
  - a waveguide carrier located within the carrier tube; and
  - an optical waveguide extending lengthwise in the longitudinal direction within the waveguide carrier;
  - wherein the waveguide carrier comprises a first carrier body having a first principal surface and a second carrier body having a second principal surface which confronts the first principal surface,
  - wherein the first principal surface has a first groove defined therein which extends lengthwise in the longitudinal direction, and wherein the second principal surface has a second groove defined therein which extends lengthwise in the longitudinal direction, and
  - wherein the first and second grooves are aligned with one another to define an elongate cavity which extends lengthwise in the longitudinal direction, and wherein the optical waveguide is contained within the elongate cavity, and
  - wherein the first carrier body has a cross-sectional configuration in a plane perpendicular to the longitudinal direction that is defined by at least opposite first and second parallel surfaces and opposite first and second non-parallel inclined surfaces, wherein one of the first or second parallel surfaces is the first principal surface of the first carrier body.
2. (Original) An optical ferrule as claimed in claim 1, wherein the first and second carrier bodies are silicon bodies.
3. (Original) An optical ferrule as claimed in claim 1, wherein the first and second principal surfaces of the first and second carrier bodies are adhered to one another.

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

4. (Original) An optical ferrule as claimed in claim 1, wherein the optical waveguide is coincident with the central axis of the carrier tube.
5. (Original) An optical ferrule as claimed in claim 1, wherein the first and second carrier bodies have a same cross-sectional configuration in a plane perpendicular to the longitudinal direction.
6. (Original) An optical ferrule as claimed in claim 5, wherein the first and second carrier bodies are silicon bodies.
7. Canceled
8. (Original) An optical ferrule as claimed in claim 5, wherein the waveguide carrier has a hexagonal cross-sectional configuration in the plane perpendicular to the longitudinal direction.
9. (Previously Presented) An optical ferrule as claimed in claim 5, wherein the waveguide carrier has an octagonal cross-sectional configuration in the plane perpendicular to the longitudinal direction.
10. (Original) An optical ferrule as claimed in claim 1, wherein each of the first and second carrier bodies have a trapezoidal cross-sectional configuration in a plane perpendicular to the longitudinal direction.
11. (Original) An optical ferrule as claimed in claim 10, wherein the trapezoidal cross-sectional configuration is an isosceles trapezoidal cross-sectional configuration.
12. (Previously Presented) An optical ferrule as claimed in claim 1, wherein the second carrier body has a cross-sectional configuration in the plane perpendicular to the longitudinal direction that is defined by at least opposite third and fourth parallel surface and opposite third and fourth inclined surfaces, wherein the first parallel surface is longer

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

than the second parallel surface and the third parallel surface is longer than the fourth parallel surface, and wherein the first parallel surface is the first principal surface of the first carrier body and the third parallel surface is the second principal surface of the second carrier body.

13. (Previously Presented) An optical ferrule as claimed in claim 1, wherein the second carrier body has a cross-sectional configuration in the plane perpendicular to the longitudinal direction that is defined by at least opposite third and fourth parallel surfaces and opposite third and fourth inclined surfaces, wherein the first parallel surface is longer than the second parallel surface and the third parallel surface is longer than the fourth parallel surface, and wherein the second parallel surface is the first principal surface of the first carrier body and the fourth parallel surface is the second principal surface of the second carrier body.

14. (Previously Presented) An optical waveguide ferrule as claimed in claim 1, wherein a cross-sectional configuration in a plane perpendicular to the longitudinal direction of an inner periphery of the carrier tube conforms with a cross-sectional configuration in the plane perpendicular to the longitudinal direction of an outer periphery of the waveguide carrier.

15. (Previously Presented) An optical waveguide ferrule comprising:

a carrier tube having a central axis which extends in a longitudinal direction

a waveguide carrier located within the carrier tube; and

a plurality of optical waveguides extending lengthwise in the longitudinal direction within the waveguide carrier;

wherein the waveguide carrier comprises a first carrier body having a first principal surface and a second carrier body having a second principal surface which confronts the first principal surface,

wherein the first principal surface has a plurality of first grooves defined therein which extend lengthwise in the longitudinal direction, and wherein the second principal

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

surface has a plurality of second grooves defined therein which extend lengthwise in the longitudinal direction,

wherein the plurality of first grooves are aligned with the plurality of second grooves to define a plurality of elongate cavities which extend lengthwise in the longitudinal direction, and

wherein the plurality of optical waveguides are contained within the plurality of elongate cavities, respectively, and

wherein the first carrier body has a cross-sectional configuration in a plane perpendicular to the longitudinal direction that is defined by at least opposite first and second parallel surfaces and opposite first and second non-parallel inclined surfaces, wherein one of the first or second parallel surfaces is the first principal surface of the first carrier body.

16. (Original) An optical ferrule as claimed in claim 15, wherein the first and second carrier bodies are silicon bodies.

17. (Original) An optical ferrule as claimed in claim 15, wherein the first and second principal surfaces of the first and second carrier bodies are adhered to one another.

18. (Original) An optical ferrule as claimed in claim 15, wherein one of the plurality of optical waveguides is coincident with the central axis of the carrier tube.

19. (Original) An optical ferrule as claimed in claim 15, wherein the first and second carrier bodies have a same cross-sectional configuration in a plane perpendicular to the longitudinal direction.

20. (Original) An optical ferrule as claimed in claim 19, wherein the first and second carrier bodies are silicon bodies.

21. Canceled

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

22. (Original) An optical ferrule as claimed in claim 19, wherein the waveguide carrier has a hexagonal cross-sectional configuration in the plane perpendicular to the longitudinal direction.
23. (Previously Presented) An optical ferrule as claimed in claim 19, wherein the waveguide carrier has an octagonal cross-sectional configuration in the plane perpendicular to the longitudinal direction.
24. (Original) An optical ferrule as claimed in claim 15, wherein each of the first and second carrier bodies have a trapezoidal cross-sectional configuration in a plane perpendicular to the longitudinal direction.
25. (Original) An optical ferrule as claimed in claim 24, wherein the trapezoidal cross-sectional configuration is an isosceles trapezoidal cross-sectional configuration.
26. (Previously Presented) An optical ferrule as claimed in claim 15, wherein the second carrier body has a cross-sectional configuration in the plane perpendicular to the longitudinal direction that is defined by at least opposite third and fourth parallel surfaces and opposite third and fourth inclined surfaces, wherein the first parallel surface is longer than the second parallel surface and the third parallel surface is longer than the fourth parallel surface, and wherein the first parallel surface is the first principal surface of the first carrier body and the third parallel surface is the second principal surface of the second carrier body.
27. (Previously Presented) An optical ferrule as claimed in claim 15, wherein the second carrier body has a cross-sectional configuration in the plane perpendicular to the longitudinal direction that is defined by at least opposite third and fourth parallel surfaces and opposite third and fourth inclined surfaces, wherein the first parallel surface is longer than the second parallel surface and the third parallel surface is longer than the fourth parallel surface, and wherein the second parallel surface is the first principal surface of

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

the first carrier body and the fourth parallel surface is the second principal surface of the second carrier body.

28. (Previously Presented) An optical ferrule as claimed in claim 15, wherein a cross-sectional configuration in a plane perpendicular to the longitudinal direction of an inner periphery of the carrier tube conforms with a cross-sectional configuration in the plane perpendicular to the longitudinal direction of an outer periphery of the waveguide carrier.

29. (Previously Presented) A method of making an optical waveguide ferrule, comprising:

- etching a silicon wafer to form a plurality of grooves which extend parallel to one another in a first surface of the silicon wafer;

- etching the silicon wafer to form a plurality of trenches in a second surface of the silicon wafer which is opposite the first surface, wherein the trenches are formed so as to extend parallel to one another between respectively adjacent pairs of the parallel grooves and in a same direction as the parallel grooves;

- separating the silicon wafer into discrete chips at respective bottoms of the trenches such that the first surface of each of the discrete chips comprises at least one of the grooves;

- placing an optical waveguide in a groove of a first one of the discrete chips;

- placing the first surface of a second one of the discrete chips against the first surface of the first one of the discrete chips such that the groove of the first one of the discrete chips is aligned with a groove of the second one of the discrete chips, wherein the optical waveguide is enclosed between the respective grooves of the first and second discrete chips.

30. (Original) The method as claimed in claim 29, wherein the silicon wafer is separated into the discrete chips by the etching of the trenches to a depth which reaches the first surface of the silicon wafer.

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

31. (Original) The method as claimed in claim 29, wherein the silicon wafer is separated into the discrete chips by a dicing saw.

32. (Previously Presented) A method of making an optical waveguide ferrule, comprising:

etching a silicon wafer to form a plurality of grooves which extend parallel to one another in a first surface of the silicon wafer;

etching the silicon wafer to form a plurality of trenches in the first surface of the silicon wafer, wherein the trenches are formed so as to extend parallel to one another between respectively adjacent pairs of the parallel grooves and in a same direction as the parallel grooves;

separating the silicon wafer into discrete chips at respective bottoms of the trenches such that the first surface of each of the discrete chips comprises at least one of the grooves;

placing an optical waveguide in a groove of a first one of the discrete chips;

placing the first surface of a second one of the discrete chips against the first surface of the first one of the discrete chips such that the groove of the first one of the discrete chips is aligned with a groove of the second one of the discrete chips, wherein the optical waveguide is enclosed between the respective grooves of the first and second discrete chips.

33. (Original) The method as claimed in claim 32, wherein the silicon wafer is separated into the discrete chips by the etching of the trenches to a depth which reaches a surface of the silicon wafer which is opposite the first surface.

34. (Original) The method as claimed in claim 32, wherein the silicon wafer is separated into the discrete chips by a dicing saw.

35. (Currently Amended) An optical waveguide ferrule comprising:

a carrier tube having a central axis which extends in a longitudinal direction;

a waveguide carrier located within the carrier tube; and

Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

an optical waveguide extending lengthwise in the longitudinal direction within the waveguide carrier;

wherein the waveguide carrier comprises a first silicon carrier body having a first principal surface and a second silicon carrier body having a second principal surface which confronts the first principal surface,

wherein the first principal surface has a groove therein which extends lengthwise in the longitudinal direction, the optical waveguide being disposed in the groove, and

wherein the first carrier body has a cross-sectional configuration in a plane perpendicular to the longitudinal direction that is defined by at least opposite first and second parallel surfaces and opposite first and second non-parallel inclined surfaces wherein one of the first or second parallel surfaces is the first principal surface of the first carrier body.

36. Canceled.

37. (Previously Presented) An optical ferrule as claimed in claim 35, wherein the first and second carrier bodies have a same cross-sectional configuration in a plane perpendicular to the longitudinal direction.

38. (Previously Presented) An optical ferrule as claimed in claim 35, wherein the waveguide carrier has a hexagonal or octagonal cross-sectional configuration in the plane perpendicular to the longitudinal direction.

39. (Previously Presented) An optical ferrule as claimed in claim 35, wherein each of the first and second carrier bodies have a trapezoidal cross-sectional configuration in a plane perpendicular to the longitudinal direction.

40. (Previously Presented) A method of making an optical waveguide ferrule, comprising:

etching a silicon wafer to form a plurality of grooves which extend parallel to one another in a first surface of the silicon wafer;



Application Serial No: 09/851,376

Attorney Docket No.: ACT-131

etching the silicon wafer to form a plurality of trenches in a second surface of the silicon wafer which is opposite the first surface, wherein the trenches are formed so as to extend parallel to one another between respectively adjacent pairs of the parallel grooves and in a same direction as the parallel grooves;

separating the silicon wafer into discrete chips at respective bottoms of the trenches such that the first surface of each of the discrete chips comprises at least one of the grooves;

placing an optical waveguide in a groove of one of the discrete chips;

placing a second chip against the first surface of the discrete chip such that the optical waveguide is enclosed between the groove of the first chip and the second chip.

41. (Previously Presented) The method as claimed in claim 40, wherein the silicon wafer is separated into the discrete chips by the etching of the trenches to a depth which reaches the first surface of the silicon wafer.

42. (Previously Presented) The method as claimed in claim 40, wherein the silicon wafer is separated into the discrete chips by a dicing saw.